

WHAT IS CLAIMED IS:

1. A method of creating an ethernet-formatted packet, based on an upstream packet, comprising the steps of:

- (a) receiving the upstream packet, comprising an upstream header and a payload;
- (b) receiving physical layer prepend data;
- (c) appending a packet tag, based on the physical layer prepend data and on an upstream packet header, to the payload of the upstream packet;
- (d) appending an encapsulation tag to the payload of the upstream packet; and
- (e) appending a source address header and a destination address header to the payload.

2. The method of claim 1, wherein the upstream packet is a DOCSIS-formatted packet.

3. The method of claim 1, wherein the physical layer prepend data comprises physical characterization of the upstream packet.

4. A system for creating an ethernet-formatted packet, based on an upstream packet, comprising:

- a physical layer (PHY) interface for receiving the upstream packet and physical layer prepend data;
- a header processor for extracting packet characteristic data from an upstream header of the upstream packet; and
- an upstream packet port egress module for encapsulating a payload of the upstream packet with tag information based on said upstream header and on said physical layer prepend data, to form the ethernet-formatted packet.

5. A method of creating a DOCSIS packet, based on a downstream packet, comprising the steps of:

- (a) receiving the downstream packet;
- (b) extracting a packet tag from the downstream packet;
- (c) performing header suppression when indicated by the packet tag;
- (d) creating a downstream header;
- (e) generating a cyclic redundancy check (CRC) when indicated by the packet tag;
- (f) encrypting the downstream packet when indicated by the packet tag;
- (g) generating a header check sequence (HCS); and
- (h) if the downstream packet contains a MAP message, formatting the MAP message in a MAP FIFO format.

6. The method of claim 5, further comprising the step of:

- (j) mapping the DOCSIS-formatted packet into an MPEG stream.

7. The method of claim 5, wherein the packet tag comprises a packet length.

8. The method of claim 5, wherein the packet tag comprises a header length.

9. The method of claim 5, wherein the packet tag comprises an indication of whether a CRC is to be generated.

10. A system for creating a DOCSIS-formatted packet based on a downstream packet, comprising:

a packet port ingress engine for receiving the downstream packet from said packet port, extracting a tag from the downstream packet, and converting said tag to a packet descriptor format;

a header suppression module for receiving a packet descriptor and performing header suppression if necessary; and

a header creation module for creating a DOCSIS header on the basis of said packet descriptor and appending said DOCSIS header to a payload of the downstream packet.

11. The system of claim 10, further comprising an encapsulation module for mapping said DOCSIS-formatted packet into an MPEG stream.